Remarks

Claims 97-117 and 133 were finally rejected under 35 U.S.C. 103(a) as unpatentable over Heming et al (U.S. 5,480,687) in view of Bruce et al (U.S. 5,250,096) or Deacon et al (U.S. 5,887,089) or Glass et al (U.S. 5,363,398) or Feldman et al (U.S. 5,249,195).

Neither Deacon et al, nor Glass et al, nor Feldman et al are mentioned by the examiner in discussing the reasons for the examiner's conclusion that the claims are unpatentable. Because there is no discussion in the reasons for the rejections by the examiner of these prior art references, applicant must assume that the prior rejections under 35 U.S.C. 103, which were based upon Deacon et al, Glass et al, or Feldman et al, as secondary references, has been withdrawn. The only remaining rejection, therefore, is the rejection under 35 U.S.C. 103(a) over Heming et al in view of Bruce et al, which is a new rejection that was not necessitated by any amendments to the claims by applicant. Applicant respectfully requests that the finality of this rejection be withdrawn to allow applicant a fair opportunity to reply by way of amendment and/or argument..

In applicant's previous Response he requested as follows: "**Applicant would appreciate the examiner's assistance in pointing out the specific portions of the cited references he is relying upon in reaching his conclusions. Applicant was unable to find any specific disclosures in the cited prior art to support the examiner's conclusions. A general reference to the cited prior art, without citing the relevant columns and line numbers for the disclosures relied upon by the examiner, makes it extremely difficult to adequately assess the examiner's rejections and the reasoning upon which they are based. A specific citation of the relevant portions of the cited prior art would allow applicant the opportunity to discuss the applicability or non-applicability of these specific citations to the patentability of the claimed invention.**" The examiner has not responded to this request, but has merely repeated his rejections as a series of conclusions without citing any specific basis in the cited prior art to support his conclusions. Applicant again makes the same request of the examiner.

The following are excerpts from the Manual of Patent Examining Procedure (MPEP), which set forth guidelines for the examiner in rejecting claims (***emphasis added***):

1) **37 CFR 1.104 (c) (2)** "When a reference ... shows or describes inventions other than that claimed by the applicant, ***the particular part relied on must be designated*** as nearly as practicable. ***The pertinence of each reference if not apparent, must be clearly explained and each rejected claim specified.***"
2) **MPEP 706.02 (j)** "...***the examiner should set forth in the Office action***:
   (A) the relevant teachings of the prior art relied upon, preferably with ***reference to the relevant column or page number(s) and line number(s)*** where appropriate,
   (B) the ***difference or difference(s) in the claim over the applied reference(s),***
   (C) the ***proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter***, and

(D) an ***explanation of why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.***"

"The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. To support the conclusion that the claimed invention is directed to obvious subject matter, either the reference must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references."
"It is important for an examiner to properly ***communicate the basis for a rejection so that the issues can be identified early and the applicant can be given fair opportunity to reply.***"

In the absence of the examiner providing the requested guidance on the specific portions of the prior art he relied upon to support the rejections, applicant will speculate on the basis for the prior art rejections and attempt to address these issues. Heming et al disclose a process for producing a high-refractive index optical waveguide with an essentially planar substrate exhibiting high breaking strength. An inorganic waveguide material is applied to the essentially planar substrate, which is made from a synthetic resin or another material having a high organic proportion. Although Heming et al suggest producing an optical base material produced by a sol-gel technique, applicant can find no teaching or suggestion of providing an active region defined within a sol-gel material.

At column 8, lines 46-52 Heming et al discuss how a waveguide functions. They state as follows: "...the sensitivity of the waveguide is determined by the difference in the refractive index between the waveguide layer and the backing. A prerequisite thereof, is **however that <u>the backing</u> is optically active, i.e. exhibits a minimum thickness of about 50µm (emphasis and underlining added)**. When using TiO_2 for the waveguide layer, the intermediate layer should consist of a material having a refractive index of between 1.3 and 1.6." This is not a suggestion or a disclosure that a sol-gel based optical interconnect (e.g. a waveguide) has an active region. It suggests that the backing is optically active because it has a minimum of about 50µm, which has no relation to an optical interconnect having an active region comprising rare earth ions. In fact, applicant does not understand and believes that one skilled in the art would not understand how just having "a minimum thickness of about 50µm makes a material optically active in the context of the definitions used to define applicant's invention.

Bruce et al disclose methods of making very pure and homogeneous glasses of many compositions. The glass body so produced may be in final form, but may be further processed to provide an article such as an optical fiber or a coating such as a planar optical waveguide on a Silicon substrate. The glass may contain oxides of one or more metals, **<u>which are not rare earth metals,</u>** such as Li, Na, K, Rb, Cs, Ti, Zr, Al or Si. **These metals are all from either Group IA, IIIA or IVB of the Periodic Table.** In

addition, there is no suggestion or disclosure that the addition of such metal oxides to this glass provides an optically active region within an optical interconnect formed from such a glass. In fact, the invention was that the addition of these metal oxides led to "the discovery that the particulate sol-gel process can lend itself to the production of these glass materials" (Col. 2. Lines 17-19).

Neither the Deacon et al, Glass et al or Feldman et al prior art references discussed in the previous Office action were discussed in finally rejecting the claims in the recent Office action. However, applicant will nonetheless discuss this prior art that was discussed in a prior Office action.

Deacon et al disclose an optical energy transfer device and an energy guiding device that use an electric field to control energy propagation using a class of poled structures in solid material. The invention may be a switchable grating which consists of a poled material with an alternating domain structure of a specific period. The poled structures that may form gratings in thin film or bulk configurations may be combined with waveguide structures to guide energy beams, such as an optical or acoustic beam. There is no suggestion or disclosure of applicant's invention, which comprises an optical interconnect, such as a waveguide, comprising a sol-gel based material with an active region that comprises rare earth ions.

Glass et al disclose a light-emitting device that comprises in ascending order: a substrate, a bottom reflector, an optically active layer and a top reflector, **wherein the reflector forms a Fabry-Perot microcavity enclosing the active layer.** The optical characteristics of the optically active layer are changed drastically by the Fabry-Perot cavity. Erbium-implanted SiO_2 (glass) may be used as the optically active layer. The structure can be used for optically pumped semiconductor devices. Glass et al show that rare earth doped glass is known in the prior art, but there is no disclosure or suggestion of an optical interconnect, such as **a waveguide, comprising <u>a sol-gel based material</u> including an active region that comprises rare earth ions.**

Feldman et al disclose an optical device with a Fabry-Perot microcavity formed by two reflective mirrors and an active layer (glass) that is doped with a rare earth element from the Lanthanide series. The fundamental mode of the cavity is in resonance with the emission wavelength of the selected rare earth element. There is no disclosure or suggestion of an optical interconnect, such as **a waveguide, comprising <u>a sol-gel based material</u> including an active region that comprises rare earth ions.**

The three secondary prior art references teach vertical cavity type devices, which do have an active area consisting of glass that has been doped with a rare earth. However, there is no disclosure or suggestion of an optical interconnect comprising <u>a sol-gel base material</u> having therein an optically active area.

Summary

In view of the foregoing amendments and remarks, it is submitted that the claims are in condition for allowance and that the Final Rejection should be withdrawn. Such an indication by the issuance of a Notice of Allowance is respectfully requested. Applicants is also enclosing herewith a Notice of Appeal from the Examiner to the Board of Appeals and Patent Interferences.

Respectfully submitted,

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Andrew F. Sayko Jr.: ______________

Date: 24 FEB. 2005